Chem-Nuclear Site ANNUAL UPDATE 2022

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The Chem-Nuclear Site in Barnwell County has a routine groundwater and surface water monitoring program. Four times each year, groundwater samples are collected from monitoring wells and from locations in Mary's Branch Creek. The information gathered is used to help understand changes in contaminant concentrations within the groundwater plume.

The most recent results for tritium are from samples collected during the second quarter of 2022 (April to June). The highest concentration of tritium continues to be found on site at monitoring well WM-0110 where it was 4,330,000 pCi/L. The concentration where the groundwater plume enters Mary's Branch Creek (WC-0002) was 91,200 pCi/L.

Surface Water

The surface water "point of compliance" is the point where regulatory limits apply. For the Chem-Nuclear Site this is location WC-0008, measured at Mary's Branch Creek. In April, the level of tritium measured at WC-0008 was 17,700 pCi/L and has been in general decline since a peak of 124,000 pCi/L on January 15, 2014. This is less than the regulatory limit of 500,000 pCi/L and essentially the same as the level measured in April 2021 (28,100 pCi/L. Maps are available at **scdhec.gov/environment/pollution-types-advisories-monitoring/pollution-services-advisorie/chem-nuclear-site**.

The second quarter of 2022 (April to June) sampling results indicates the presence of five volatile organic compounds (VOC) present in the creek. Chloroform (1.99 µg/L), 1,2-dichloroethane (<1.00 µg/L), trichloroethylene (<1.00 µg/L), 1,1,2,2-tetrachloroethane (<1.00 µg/L) and 1,4-dioxane (219 µg/L) were detected at the concentrations indicated. The concentrations of 1,4-dioxane at WC-0002 and WC-0008 are less than the concentrations in 2021. The regulatory limit for chloroform is 80 µg/L. The regulatory limit for trichloroethylene and 1,2-dichloroethane is 5 µg/L. Regulatory limits have not been established for 1,1,2,2-tetrachloroethane or 1,4-dioxane.

Trends in Ground Water and Surface Water Data

The Chem-Nuclear Site submits an annual trending report each year in September discussing changes in tritium concentrations in groundwater and surface water and changes to the size and shape of the groundwater plume. DHEC reviews the report for accuracy and completeness. In the 2022 annual trending report, 27 monitoring locations (both groundwater and surface water) were evaluated for changes in tritium concentrations. The tritium data indicate that eight monitoring locations show no evidence of a trend either up or down, four locations show an upward trend, and fifteen locations show a downward trend over the most recent five-year period (third quarter 2017 to second quarter 2022).

Data collected from monitoring well WM-0110, the most contaminated well discussed above, show that tritium concentrations have decreased over the last five years. Although concentrations in individual monitoring wells change, the overall size and shape (footprint) of the groundwater plume remains stable.

Tritium concentrations at WC-0008 (the surface water point of compliance on Mary's Branch Creek) remain stable from the same time last year; and data show the overall trend in tritium concentrations at WC-0008 has decreased over the five year period. The 2022 annual trending data is available at **scdhec.gov/environment/pollution-types-advisories-monitoring/pollution-services-advisorie/chem-nuclear-site**.

Waste Volumes

Since July 2008, the Chem-Nuclear Site only accepts waste from the three member states of the Atlantic Compact – Connecticut, New Jersey and South Carolina. The table below shows the total waste volume for each fiscal year (FY) disposed of from the Atlantic Compact member states for the last five years.

FISCAL YEAR	VOLUME (FT^3)
2017-2018	16,363.41
2018-2019	9,855.58
2019-2020	25,019.66
2020-2021	23,686.16
2021-2022	**8,433.70**

DEFINITIONS

Groundwater – The water found beneath the Earth's surface, usually in aquifers, which supply wells and springs.

Picocuries Per Liter (pCi/L) – A unit of measure of radioactivity.

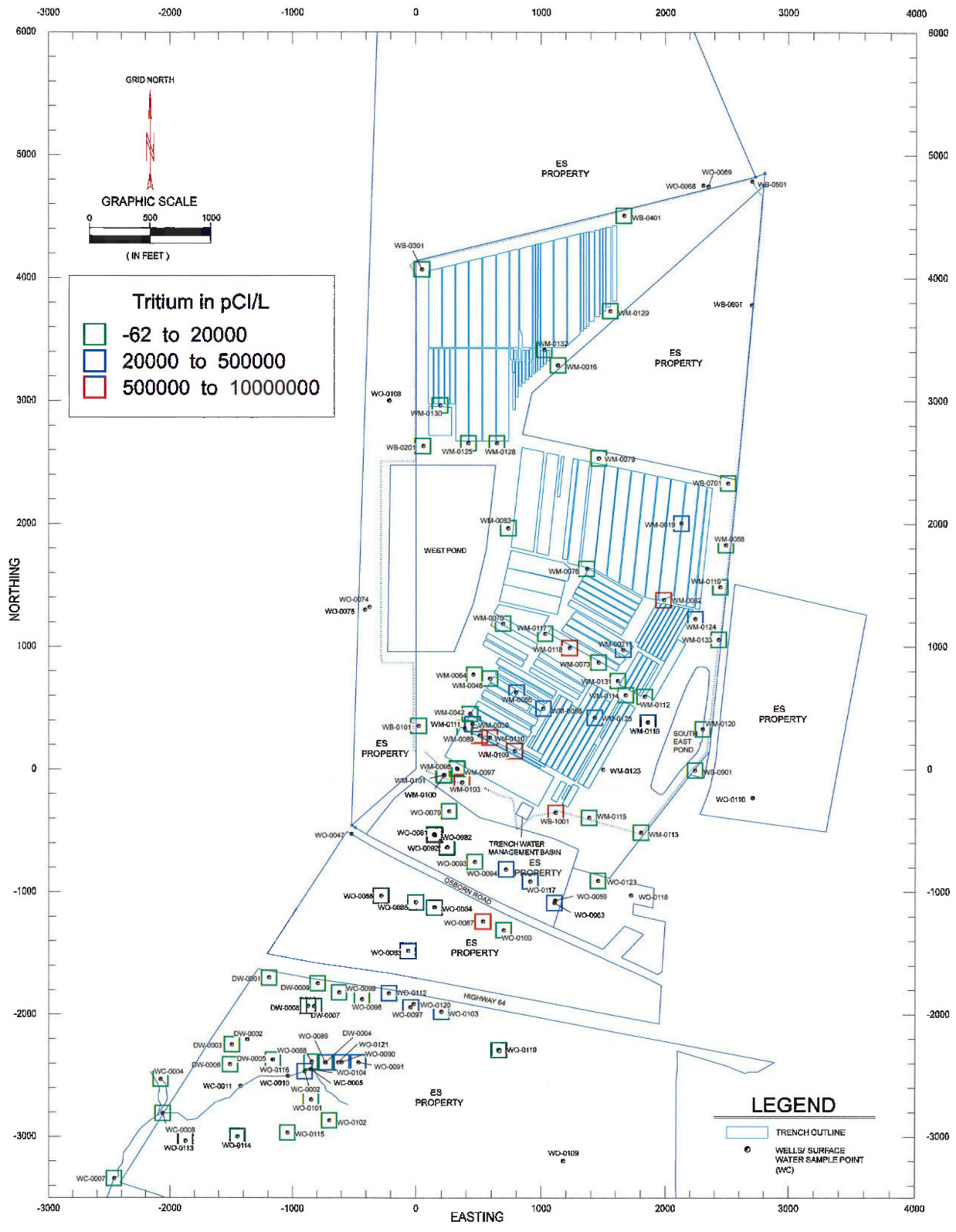
Plume – An area where contamination is detected (or is measurable).

µg/L – A unit of measure for one millionth of a gram per liter or one part per billion (ppb).

Volatile Organic Compounds (or Chemicals) (VOCs) – Chemicals that evaporate readily when exposed to air and are widely used to clean things.

TRITIUM CONCENTRATION MEASURED IN ZONE 2 AND MARY'S BRANCH CREEK

Second Quarter 2022



1. For information, the approximate Energy*Solutions*/Chem-Nuclear Systems property boundaries are shown.
2. Results are uncensored. Tritium concentration that is less than the limit of detection is input as the concentration reported by the instrument with appropriate corrections.
3. Does not show deep Zone 2 well tritium results for monitoring locations WO-0059, WO-0120, WO-0121, and WO-0122.
4. Base map shows WO-0059 location but tritium information is not plotted.
5. Does not show Zone 2 well tritium results of monitoring locations WO-0124, WO-0125, and WO-0126.

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